



August 6, 2019

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

Re: Expanding Flexible Use of the 3.7 GHz Band  
GN Docket No. 18-122  
Notice of Joint Ex Parte Presentations

On August 5, 2019 the undersigned representatives of the Wireless Internet Service Providers Association (“WISPA”) and Google LLC, and Stephen Coran, counsel to WISPA, met separately with Aaron Goldberger, Legal Advisor to Chairman Ajit Pai; Erin McGrath, Legal Advisor to Commissioner Michael O’Rielly; Will Adams, Legal Advisor to Commissioner Brendan Carr; Umair Javed, Legal Advisor to Commissioner Jessica Rosenworcel; and Bill Davenport, Legal Advisor to Commissioner Geoffrey Starks. The purpose of the meeting was to discuss the recent co-channel coexistence study prepared by Professor Jeff Reed, the Willis G. Worcester Professor of Electrical and Computer Engineering at Virginia Tech and the founding director of Wireless @ Virginia Tech which was submitted in the record on July 15, 2019.<sup>1</sup>

The WISPA and Google representatives stressed the benefits of co-channel sharing among receive-only earth stations and fixed point-to-multipoint (“P2MP”) operations in the C-band as a means to help advance “the Commission’s top priority” of bridging the digital divide.<sup>2</sup> Contrary to other proposals that only clear a portion of the C-band, the plan initially proposed by the Broadband Access Coalition in its petition for rulemaking – strongly supported by WISPA, Google and many others – presents a significant opportunity for the Commission to make a substantial amount of spectrum available for rural fixed wireless broadband coverage.

We highlighted and discussed the following primary conclusions of the Reed Study:

- **P2MP in shared C-band spectrum can provide gigabit broadband access for more than 80 million Americans, with greater availability in rural areas where**

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<sup>1</sup> See Letter from Wireless Internet Service Providers Association, Google LLC, and Microsoft Corp. to Marlene H. Dortch, FCC Secretary, GN Docket No. 18-122 (filed July 15, 2019). The report prepared by Prof. Reed (“Reed Study”) was attached thereto and a copy was distributed at the meetings for the convenience of the legal advisors.

<sup>2</sup> *Rural Digital Opportunity Fund*, Notice of Proposed Rulemaking, WC Docket Nos. 19-126 and 10-90, FCC 19-77 (rel. Aug. 2, 2019) at 2.

**earth stations are less prevalent.** We explained that 300 megahertz of C-band spectrum would allow gross throughput rates of approximately 1.2 gigabits per second for P2MP systems, assuming a conservative overall average of 4 bits/second/hertz spectral efficiency. Importantly, we emphasized that the Reed Study did not consider non-co-channel sharing, which would greatly expand the number of Americans that could receive access to shared C-band spectrum for P2MP services. Taking into account all 18,000 registered earth stations, this confirms the viability of business models that will incentivize equipment development and rapid deployment.

- **P2MP will not cause harmful interference to co-channel FSS.** The Reed Study demonstrated that, on average, earth stations typically require about 10 km of protection around their sites, with specific values to be determined through coordination.<sup>3</sup> As evidence of this average “real world” protection range, Dr. Clegg distributed the attached Google Earth images showing that earth station operators in the Los Angeles area had consented to P2MP operations in the adjacent 3650-3700 MHz band at distances as small as 10.3 km. It was further explained that operations much closer than the 150 km range established under Part 90 rules in 2008 were co-existing throughout the country. In essence, automated frequency coordination would eliminate the transactional costs that 3650-3700 MHz licensees expend to negotiate consent to operate within the extremely large zones. Dr. Clegg explained that the Citizens Broadband Radio Service (“CBRS”) sharing algorithms incorporated into the Spectrum Access System (“SAS”) and the assumptions used in the Reed Study relied on similar inputs. Accordingly, the sharing plan is technologically feasible from both theoretical and “real world” perspectives.

We explained that coordination among earth stations and P2MP is orders of magnitude easier than the CBRS SAS because there are no Federal incumbents or shipborne operations that require protection. Coordination standards can be developed very quickly based on the “real world” sharing that is already occurring that the Reed Study has confirmed.

In addition, at the meetings with Messrs. Adams, Javed and Davenport, we explained that access to spectrum would reduce deployment costs and expedite deployment in rural areas where vertical infrastructure is less plentiful and fiber capital costs are often prohibitive. This efficiency and cost-effectiveness would enable C-band spectrum to be used for Connect America Fund and Rural Development Opportunity Fund deployments at lower cost to the Universal Service Fund, enabling more locations to be served with finite support funds.

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<sup>3</sup> As noted in the Reed Study, the 10 km range is based on a statistical average and is intended for the baseline performance and for estimating the national coverage. In practice, each P2MP system would be designed and coordinated on a site-specific basis, taking all surrounding earth stations into account, and fully protecting those operations.

Pursuant to Section 1.1206 of the Commission's Rules, this letter is being filed in ECFS in above-referenced docket. Please contact the undersigned with any questions.

Respectfully submitted,

**WIRELESS INTERNET SERVICE  
PROVIDERS ASSOCIATION**

By: /s/ Louis Peraertz  
Louis Peraertz, Vice President of Policy

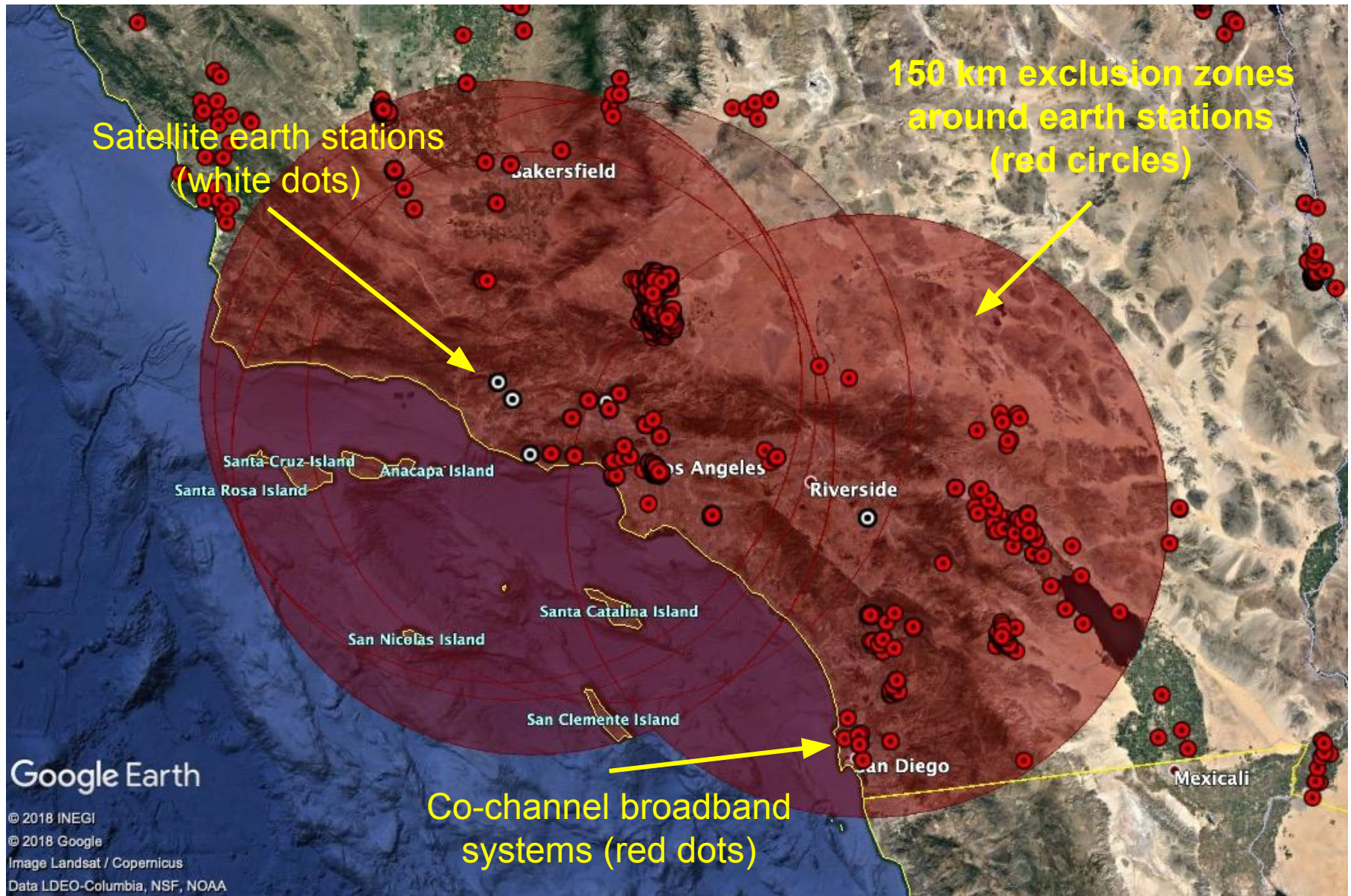
**GOOGLE LLC**

By: /s/ Andrew Clegg  
Andrew Clegg, Spectrum Engineering Lead

Attachment

cc: Aaron Goldberger  
Erin McGrath  
Will Adams  
Umair Javed  
Bill Davenport

Lots of broadband systems (small red dots) already exist well within the 150 km “exclusion zones” (large red circles) around extended C-band earth stations (white dots). No interference is known to occur.





Example of a co-channel broadband system only 10.3 km away from a co-channel earth station, beaming 7 W EIRP directly toward the earth station. The earth station points back at the broadband transmitter. No interference is known to occur.

